

AMENDMENTS TO THE DRAWINGS:

Please replace Figures 1 and 2 with the attached sheets.  
Figure 1 has been amended to add headings.

Attachment: Replacement Sheet

**REMARKS**

The Examiner is thanked for the due consideration given the application. An amended sheet of drawing figures has been provided. The specification has been amended to improve the language.

Claims 1-22 are pending in the application. The claims have been amended to improve their language in a non-narrowing fashion.

No new matter is believed to be added to the application by this amendment.

**Claim Objections**

The claims have been objected to as containing informalities. The comments in the Official Action have been considered, and the claims have been amended to address the informalities.

However, it is noted a "a specimen" is set forth in line 8 of claim 1, and subsequent references to the specimen have antecedent basis.

It is also noted that the claims have been amended to be free of means-plus-function language.

It is accordingly respectfully requested that the objections to the claims be withdrawn.

**The Drawings**

The drawing figures have been objected to as having boxes that are not properly labelled. An amended Figure 1 has been submitted with this paper, in which the boxes have been labelled.

**Rejection Under 35 USC §112, Second Paragraph**

Claims 20-22 have been rejected under 35 USC §112, second paragraph as being indefinite. This rejection is respectfully traversed.

The Official Action asserts that claims 20-22 are not clear. However, claims 20-22 have been amended to be clear, definite and have full antecedent basis.

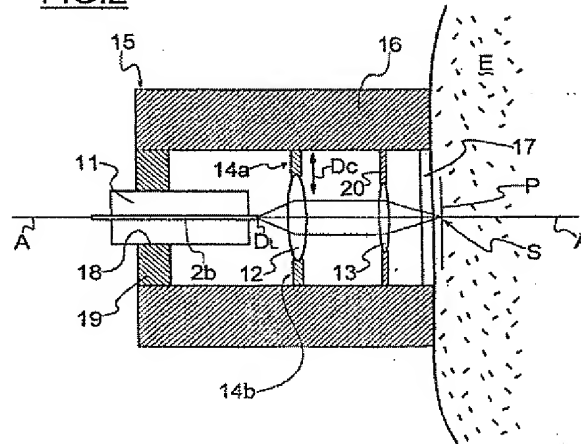
This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

**Rejection Over SEIBEL in view of BARBATO et al.**

Claims 1-22 have been rejected under 35 U.S.C. §103(a) as being anticipated by SEIBEL (U.S. Patent 6,975,898) in view of BARBATO et al. (US 2003/0130562 A1). This rejection is respectfully traversed.

The present invention pertains to a miniature confocal optical head for a confocal imaging system, particularly endoscopic, which is exemplarily illustrated, in part, in Figure 2 of the application, which is reproduced below.

FIG.2



SEIBEL pertains to a medical imaging system in which most of the embodiments are not confocal. The only confocal system in SEIBEL is the concentric optical fiber assembly 280 in Figure 6C, which is reproduced below.

Figure 6C, which is reproduced below.

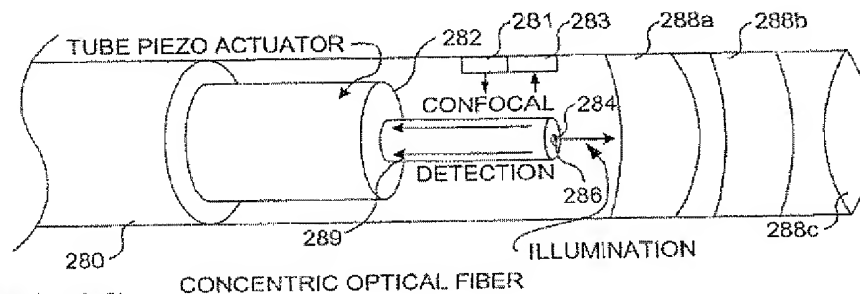


FIG. 6C

SEIBEL at column 17, lines 54-63 states:

*It should be noted that a single optical fiber can both illuminate the ROI and convey light from the ROI to the external instrumentation in this so-called concentric confocal imaging. The concentric optical fiber geometry is a single mechanical unit either fused together, or alternatively, the concentric regions of refractive index differences can be manufactured by doping the glass fiber radially. A tubular piezoelectric actuator 282 causes the concentric optical fibers to move together and thus to scan the ROI in one of the modes described above.*

It is clear that the actuator only acts on the optical fiber.

In the present invention, the scanning direction, which is perpendicular relative to the optical axis, is obtained by the displacement of converging optical means.

Claim 1 of the present invention recites "mechanical micro-system means MEMs (14a-b) capable of moving in translation along a chosen displacement (Dc) at least one of the optical means (12, 13)."

**Accordingly, SEIBEL fails to disclose a confocal assembly in which the scanning direction, which is perpendicular relative to the optical axis, is obtained by the displacement of converging optical means.**

The Official Action acknowledges that SEIBEL fails to disclose a true Euclidean translation along a chosen displacement, as the design is capable of rotational (2-axis)

motion, rather than just along one axis. The Official Action refers to BARBATO et al. for these teachings.

BARBATO et al. disclose an imaging device having a light source, a photo-sensor and a scanning assembly. The photo-sensor is mounted on the scanning assembly.

BARBATO at paragraph [0007] states: *"The scanning assembly scans the target to enable the photo-sensor to detect light energy from each of a plurality of locations on the target."*

BARBATO at paragraph [0036] states: *"The photo-sensor assembly 124 fixedly mounts on a platform 126. The platform 126, in turn, movably mounts the base 128 by way of a universal pivot joint 130. The universal pivot joint 130 enables the platform 126 to move in both the x and y-axes. The actuators 132a, 132b, 133a and 133b actuate the movement of the platform 126 with respect to the base 128."* The actuators may be MEMs."

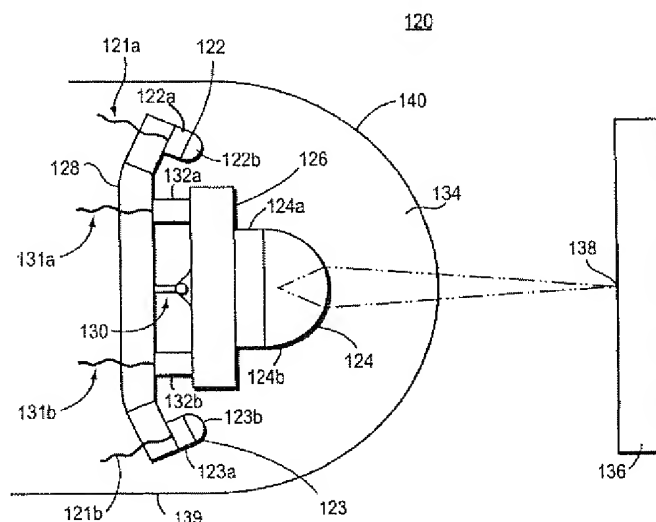


FIG. 1B

It is clear that the actuators act on the photo-sensor assembly and not on optical device capable of causing optical beam to converge into an excitation point.

Furthermore, for one skilled in the art, the presence of pivot joint 130 means that the displacements are not in translation.

BARBATO at paragraph [0044] states:

*According to the illustrative embodiment of FIG. 4, the scanning system 400 includes a scanning mechanism 416, located in the first end 406 of the elongated sheath 408, and adapted for moving the end 414 of the fiber optic connection 412 to scan synchronously light from the source 402 onto each of a plurality of locations on the target 136, and to transfer light energy from each of the plurality of locations on the target 136 back to the photo-sensor 404.*

In this embodiment, the actuators act on the end 414 of the optical fiber and not on optical device capable of causing optical beam to converge into an excitation point.

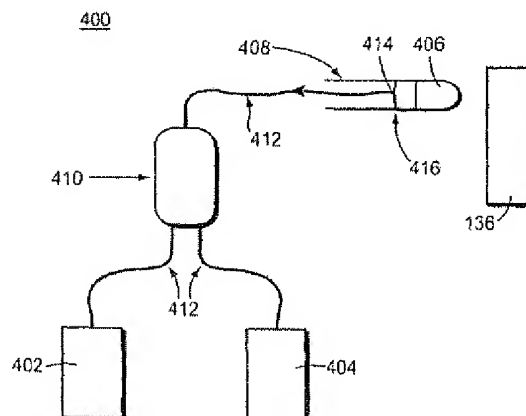


FIG. 4

The combination of SEIBEL with BARBATO et al. fails to disclose MEMs capable of moving in translation along a chosen displacement at least one of the optical means which is mobile in a direction perpendicular to said optical axis so as to obtain at least one of said scanning directions. One of ordinary skill and creativity would thus fail to produce a claimed embodiment of the present invention from a knowledge of SEIBEL and BARBATO et al. A *prima facie* case of unpatentability has thus not been made.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

#### **Conclusion**

The Examiner is thanked for considering the Information Disclosure Statement filed September 19, 2005 and for making an initialled PTO-1449 Form of record in the application.


Prior art of record but not utilized is considered to be non-pertinent to the instant claims.

The objections and rejections are believed to be overcome, obviated or rendered moot, and that no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment



to Deposit Account No. 25-0120 for any additional fees required  
under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

  
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**APPENDIX:**

The Appendix includes the following item:

- ☒ - a Replacement Sheet for Figures 1 and 2 of the drawings